



## Pathology Biology Section – 2003

### **G7 Look Until You See: An Unexpected Delayed Death Following a Motor Vehicle Accident**

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By attending this presentation, the participant should expect to gain a renewed appreciation for the fact that small and seemingly unrelated phenomena can coalesce to produce a significant outcome. This poster has three objectives: to highlight the importance of a thorough review of all available resources from the events surrounding an accident and subsequent death; to reinforce the importance of approaching the complete autopsy without bias to avoid missing important details; and, to provide a brief review of the literature pertaining to splenic injury in motor vehicle accidents.

Although deaths due to motor vehicle accidents are commonplace in today's mobile society, this case report emphasizes several important points. Careful attention must be given to multiple aspects of an individual's life when conducting a medico-legal death investigation. Coupling information from the accident scene with the antemortem medical encounter and the medical history was essential, in conjunction with a complete autopsy, to arrive at an understanding of all the contributing factors in this initially surprising cause of death.

A 37-year-old white female sustained apparently minor injuries in a single vehicle accident in which she was the belted driver. At the emergency room of a rural hospital, she complained only of a headache and some lower back pain. The physical exam noted a frontal contusion and specified that the abdomen was soft and non-tender. All imaging studies obtained (plain film only) were negative, and the only significant lab test revealed thrombocytopenia. The patient was discharged home, reportedly feeling fine, at 2000 that evening. She woke up at around 0230 with nausea and vomiting but returned to bed with no further complaints. Her parents found her cold and without vital signs at 0630.

Postmortem external exam revealed the previously noted frontal contusion and a newly prominent periorbital ecchymosis. A few scattered contusions were also noted on the extremities. Notably absent were any abdominal contusions. The internal exam began with the unexpected discovery of free blood trickling from the abdominal cavity. The hemoperitoneum was significant, with slightly over 1000cc of free blood recovered from the abdomen. Further exploration of the organs *in situ* demonstrated a pale, nodular liver and a grossly enlarged spleen with a large subcapsular hematoma. Examination and dissection of the spleen revealed a rent in the capsule in addition to the Grade III laceration in the body of the organ. The exam of the head revealed a subgaleal hematoma but was negative for any deeper trauma including epidural, subdural, or subarachnoid bleeding and parenchymal contusions.

The deceased in this case was the unfortunate victim of synergistic activity between her disease processes and the injuries she sustained in the accident. The overtly cirrhotic liver was the result of her known history of chronic ethanolism and her questionable history of viral hepatitis. The cirrhosis, in its obviously advanced stage, had caused a significant degree of splenomegaly. This splenomegaly in turn was likely responsible for the thrombocytopenia indicated by the lab results at the emergency room.

The blunt injury to the abdomen sustained in this apparently minor car accident was sufficient, partly due to the massively engorged state of the spleen, to cause a Grade III splenic laceration. The injury to the parenchyma of the spleen continued to bleed into the subcapsular space. Because of the thrombocytopenia, likely caused by the hypersplenic state resulting from the cirrhosis, the victim was apparently unable to achieve sufficient hemostasis. The subcapsular hematoma continued to expand and eventually ruptured the capsule, perhaps by simply extending an existing defect sustained in the initial impact injury. This resulted in the generous hemoperitoneum and subsequent death of the victim. The automobile accident in this case would have caused minor to moderate injury in an otherwise healthy person. However in this victim, the diseased organ systems in conjunction with the mechanism of injury resulted in the lethal outcome.

*\*The views expressed in this abstract are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.*

**Motor Vehicle Accident, Blunt Abdominal Trauma, Splenic Laceration**